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ABSTRACT

This paper examines two kinds of student engagement: "procedural," which concerns classroom rules and regulations; and "substantive," which involves sustained commitment to the content and issues of academic study. It describes the manifestations of these two forms of engagement, explains how they relate differently to student outcomes, and offers some empirical propositions using data collected on literature instruction, collected during 1987-88 from 58 eighth-grade English classes (N=1,041 students). The results provide support for the following three hypotheses: (1) disengagement adversely affects achievement; (2) procedural engagement has an attenuated relationship to achievement because its observable indicators conflate procedural and substantive engagement; and (3) substantive engagement has a strong, positive effect on achievement. Features of substantively engaged instruction include authentic questions or questions that have no prespecified answers; uptake or the incorporation of previous answers into subsequent questions; and high-level teacher evaluation or teacher certification and incorporation of student responses in subsequent discussion. Each of these features is noteworthy because it involves reciprocal interaction and negotiation between students and teachers, which is said to be the hallmark of substantive engagement. (Author/TJH)

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INSTRUCTIONAL DISCOURSE AND STUDENT ENGAGEMENT

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Abstract

This paper examines two kinds of student engagement: "procedural," which concerns classroom rules and regulations, and "substantive," which involves sustained commitment to the content and issues of academic study. It describes the manifestations of these two forms of engagement, explains how they relate differently to student outcomes, and offers some empirical propositions using data on literature instruction from 58 eighth-grade English classes. The results provide support for three hypotheses: (a) Disengagement adversely affects achievement; (b) Procedural engagement has an attenuated relationship to achievement because its observable indicators conflate procedural and substantive engagement; and (c) Substantive engagement has a strong, positive effect on achievement. Features of substantively engaging instruction include authentic questions, or questions which have no prespecified answers; uptake, or the incorporation of previous answers into subsequent questions; and high-level teacher evaluation, or teacher certification and incorporation of student responses in subsequent discussion. Each of these is noteworthy because they all involve reciprocal interaction and negotiation between students and teachers, which is said to be the hallmark of substantive engagement.

INSTRUCTIONAL DISCOURSE AND STUDENT ENGAGEMENT

American secondary school teachers face few problems as vexing as that of motivating students to work hard at their studies. Probably every teacher has had the experience of preparing what seemed to be an exciting, challenging lesson, only to see it fail to raise an eyebrow among students who at best go along far enough to obtain whatever grade they consider acceptable. The problem of creating and sustaining student engagement in schoolwork is an important one for at least two reasons. First, when students are engaged, teachers find their work more rewarding (Lortie, 1975). Second, and most central for this paper, engaged students are more likely to learn the knowledge and skills that schools have to offer.

One difficulty in examining these propositions is that engagement is a difficult concept to measure. In this paper, we suggest that there are at least two forms of student engagement, which we term "procedural" and "substantive." The first reflects an accommodation to classroom rules and regulations, whereas the second involves sustained commitment to the content and issues of academic study. The tasks of this paper are to describe the manifestations of these different forms of engagement, to explain how they relate differently to student outcomes, and to examine some empirical propositions using data on classroom instruction in 58 eighth-grade English classes.

Procedural versus Substantive Engagement

Typically, few students are actively offtask, or disengaged (Goodlad, 1984). Rather, most students are at least engaged in the procedures of their school tasks: they mainly pay attention; they do not distract from the business of the classroom; they do their work; they sometimes ask questions, typically about what they are to do (e.g., how long their papers have to be, whether or not they have to learn all the terms listed at the end of a chapter, etc.); and they do their homework and assignments in a timely and acceptable manner. In short, they competently go through the motions of school. Occasionally they become genuinely engaged in academic problems and issues. But for most students, this kind of engagement is rare. In Bloome and Argumedo's (1983) terminology, the main kind of student engagement with school is one of **procedural display**; we call it **procedural engagement**.

Academic achievement, however, requires more than competence in school procedures. More to the point, it requires sustained commitment to and engagement in the content of schooling, i.e., the problems and issues of academic study. In contrast to procedural engagement, which lasts only as long as the task itself, we call this kind of student activity **substantive engagement**. Significant academic achievement is not possible without sustained, substantive engagement, which transcends procedural engagement.

This distinction between procedural and substantive engagement helps us see that student engagement depends not only on students' involvement with their schoolwork but also on the quality of the schoolwork they invest themselves in. On the one hand, student engagement depends on students' psychological investment in class activities, and fully played out, this investment will lead to mastery. But if students are required to invest themselves in little more than

filling in blanks, taking multiple-choice tests, and reciting and recalling superficially treated content, or, if, in English, they are taught only the formal requirements of English prose (usage, mechanics, the format of a five-paragraph theme, etc.) without any attention to content, then their engagement and mastery will by definition be limited to a set of procedures. Schoolwork and class activities will foster substantive student engagement only if these activities require more than a mastery of procedures.

How can student engagement be recognized? What does an engaged student look like? And what empirical distinctions can be made between procedural and substantive engagements? There are no easy answers to these questions. Certainly all engaged students do not manifest their engagement in the same way. In class, for example, procedural engagement is characterized by normal, unproblematic, but otherwise undistinguished behavior; hence, procedurally engaged students are less likely to be offtask than disengaged students. By contrast, substantively engaged students may well ask more questions than other students, especially about the content of study, and not just about how many words they need to write, or whether they may use pencil instead of pen. But clearly these behavioral manifestations are incomplete and inadequate as measures of student engagement. And often they do not distinguish between students who are procedurally engaged and those who are substantively engaged. Substantive student engagement may manifest itself as a twinkle in the eye, or it may not; substantive student engagement may manifest itself as rapt attention for a long period of time, or it may not; substantive student engagement may for many students manifest itself only years after they leave school, or it may not. Many instances of substantive engagement are no more visible than thought itself. Conceivably some examples of substantive engagement may even manifest

themselves in terms of significant offtask behavior, as in the example of students so completely absorbed by a scientific project that they do no English in English and no social studies in social studies. Clearly, the manifestations of student engagement are sundry, ambiguous, and elusive. Often there simply are no clear behavioral manifestations of engagement, certainly no uniform manifestations.

Quality of Instructional Discourse and Substantive Student Engagement

We have chosen to investigate the quality of instructional discourse as a source of data on student engagement. Mehan (1979) showed that classroom question-answer episodes typically have three parts: an **initiation** (the teacher's question), a **response** (a student's answer), and an **evaluation** (the teacher's response to the student's answer). This three-part structure characterizes the normal procedures of classroom recitation, and students who regularly interact with teachers in these sequences may be said to be procedurally engaged. Typically, teachers' evaluations of student answers are a perfunctory "Right" or "Wrong," a "Good" or an "Okay," sometimes merely a nod, sometimes nothing. In variations on this sequence of initiation-response-evaluation, however, some teachers respond more substantially. For example, a teacher might respond to a student answer by saying, "Good point," and then asking a followup question. When teachers do this, they work students' answers into the fabric of an unfolding exchange, and as these answers modify the topic or affect the course of discussion in some way, these teachers certify these contributions and modifications. In our project, we call such evaluations **high-level evaluation**.

In recitation, teachers typically ask a series of preplanned questions to test students' knowledge. The topics covered are entirely the teachers', and rarely does the teacher interact with the substance of students' answers except to

evaluate them. This is why the engagement of students who participate in recitation is rarely more than procedural. By contrast, high-level evaluation is substantively engaging because the teacher acknowledges and builds on the substance of what the student says.

Another way that teachers substantially engage their students in question-and-answer is by not prespecifying the answers to their questions. For example, they ask open-ended questions, or they ask questions to which they really don't know the answers. Like high-level evaluation, these questions, which we call **authentic questions** to distinguish them from **test questions**, signal to students the teachers' interest in what students think and not just whether they know what someone else thinks or has said.

Yet another way that teachers substantially engage their students in question-and-answer is by following up on student answers by incorporating these answers into subsequent questions, a process that Cazden (1988), Collins (1982, 1986), and others call uptake. Here is an example:

Teacher: What is a lobbyist?

Student: Someone who represents someone else.

Teacher: "Represents" for what purpose?

In this exchange the teacher's second question is an example of uptake because it incorporates and, in this case, actually quotes part of the student's response ("represents"). High-quality instructional discourse frequently manifests uptake because, like authentic questions, it accommodates input from students.

Taken together, high-level evaluation, authentic questions, and uptake are aspects of classroom discourse in which student-teacher exchanges unfold not simply according to the teacher's preplanned agenda of questions, but rather where teachers and students work in terms of each other, and where, as a

result, the course of classroom talk depends on what both teachers and students bring to the instructional encounter. When teachers ask authentic questions, they open the floor to what students have to say; when they engage in uptake, they build on what students have said; and when their evaluation of student responses is high, they certify new turns in the discussion occasioned by student answers. These aspects of classroom discourse, which lend thematic coherence to the talk by interweaving discussion topics across teacher-student turns, serve to sustain student-initiated ideas and responses.

Such interleaving of discourse topics from one speaker to the next, of course, is common in -- indeed is the very structure of -- conversation as the conversants typically pick up on each other's comments. Substantively engaging classroom talk is hence a lot like conversation. In neither conversation nor high quality instructional discourse can the substance be specified in advance by any of the conversants. Just as the substance and conduct of talk are negotiated in the process of conversing (Sacks, Schegloff, and Jefferson, 1974), substantively engaging instruction is created through a process of negotiation between teachers and students (Nystrand and Gamoran, 1988).

The extent to which class discourse resembles conversation is in fact an excellent criterion for judging both the instructional quality of classroom discourse and the extent of substantive student engagement. By this, we do not mean to suggest that instruction should be given over to idle chatter, but rather that students are most likely to be substantively engaged when the treatment of subject matter allows for extensive interaction. Hence, substantive student engagement is often high in small-group work and discussion; it is much less likely in lecture; and it generally exists in question-and-answer only to the

extent that questions are authentic, teacher evaluations are high-level, and uptake is present.

In recitation, most questions are asked by the teacher, get a response and a low-level evaluation, are test questions involving no uptake, and elicit the cognitive level of a report. By contrast, in collaborative work among peers in small groups, all the questions are asked by students, are authentic and typically exhibit uptake in just the way that discussion and conversation are typically high in these values. In both recitation and small-group work, then, uptake, authenticity, and level of evaluation are useful criteria for judging the quality of instructional discourse and, consequently, student engagement. We argue that question-answer exchanges between teachers and students that are characterized by authentic questions, uptake, and high-level evaluation are substantively engaging. Collaborative, small-group work and discussion which also exhibit these characteristics are also substantively engaging. By contrast, question-answer exchanges that are low in these terms will rarely be more than procedurally engaging.

By "collaborative work" and "discussion," of course, we are referring to <u>real</u> small-group work and <u>real</u> discussions where students have some input into and control over the discourse; we do not include here small group time that is used to complete worksheets, an activity which might more properly be called "collaborative seatwork."

Procedural engagement is more or less obvious, we have noted, from the direct observation of individual students: they do their work, are not disruptive, etc. But substantive engagement is more complicated and often cannot be ascertained by scrutinizing the behavior of individual students alone. Substantive engagement is usually obvious in student-teacher and peer interactions where the

conversants clearly work in terms of each other, e.g., where the teacher picks up on the substance of a student's response and where, consequently, the topic is sustained across conversation turns. To put this in other terms, substantive engagement requires a high degree of **reciprocity** between conversants (cf. Nystrand, 1986; Nystrand and Gamoran, 1988). As Cummins (1986) notes, **reciprocal-interaction instruction** requires "a genuine dialogue between student and teacher in both oral and written modalities, guidance and facilitation rather than control of student learning by the teacher, and the encouragement of student/student talk in a collaborative learning context" (Cummins, 1986, p. 28). Cummins goes on to note the chief features of such instruction:

> This model emphasizes the development of higher level cognitive skills rather than just factual recall, and meaningful language use by students rather than the correction of surface forms. Language use and development are consciously integrated with all curricular content rather than taught as isolated subjects, and tasks are presented to students in ways that generate intrinsic rather than extrinsic motivation (Cummins, 1986, p. 28).

Whereas procedural engagement is possible when teachers dominate the agenda of classroom learning, substantive engagement is possible only in instructional arrangements where students as well as teachers have input into the business of learning.

Like classroom discourse, writing and reading can be either procedurally or substantively engaging or both. In our research, therefore, we have examined not only class discussion but also writing and reading in these terms -- the universe of instructional discourse, that is, as it affects the learning of students in our study.

One type of writing commonly taught in high school that is far more procedurally than substantively engaging is the **5-paragraph theme**, an expository format consisting of (a) an introductory paragraph stating a thesis, (b) a body of three paragraphs, each one stating a different argument, followed by (c) a concluding paragraph. The stipulation of this format for three main points is categorical and independent of the writer's subject and argument. Hence, students need not figure out if their arguments actually have more or fewer than three main points; one of their first tasks is to devise three main points. There is no authenticity in these tasks since teachers prespecify the type of response, i.e., 5-paragraphs, that they expect. Moreover, if teachers evaluate students' 5-paragraph themes mainly in terms of adequacy of form, level of evaluation will be low. In short, the conception of an essay as a 5-paragraph form reduces--some would say "trivializes" -- exposition to a procedure, as do all types of writing instruction in which content, substance, and writer purpose are subjugated to form and procedure. Britton et al. (1975) call these writing tasks, which are endemic to schools, **dummy runs**.

By contrast, some English teachers ask students to write position papers in which they must further articulate the positions they take in lively class discussions. In cases such as these, the discussion serves as prewriting, and, because the students write about an argument they care about and therefore have something to say, the writing task is often substantively engaging, not to mention intrinsically rewarding and interesting. Authenticity will be high in such cases since the teacher does not prespecify the content of papers, but level of evaluation will depend, of course, on whether or not the teacher responds to the paper by picking up on the content of the paper in his or her evaluation. Applebee and Langer (Applebee and Langer 1983; Langer and Applebee, 1984,

1986) have argued that such writing tasks promote student "ownership" because they afford students considerable flexibility concerning the content they cover and the views they express.

This example manifests another characteristic of high quality instructional discourse: the frequency that one instance of discourse adjoins another. Examples include prewriting that leads to writing, writing that leads to rewriting, writing that leads to reading, reading that leads to writing, discussion that leads to either, and writing and reading that lead to discussion. Uptake is also an example in the sense that teachers' comments pick up on and are therefore contiguous with a student's contribution. In our study, we include all such examples of discourse enriched by other discourse under the heading of **discourse contiguity.**

Another type of writing instruction that is often substantively engaging involves peer conferencing, a method requiring students to review and discuss their writing with each other in groups of four or five. In peer conferencing, teachers give students no checklists to use in monitoring their discussions. Rather, they encourage groups to focus on the clarity and adequacy of what each writer has to say, i.e., on the writer's purpose and the substance of the paper, and instruct them to avoid checking spelling, punctuation, and usage. In these peer groups, the talk is authentic since students typically don't quiz each other but exchange only that information they actually need to know. Uptake is also high so long as the conversants listen and respond appropriately to each other.

Journal keeping is yet another type of writing that is substantially engaging for many students. In keeping journals, students get to write about topics that interest them, which is to say, teachers prespecify none of the content; in our

terms, the discourse of journals is highly authentic. Journal entries are often highly expressive and loosely organized, almost always informal: it is okay for students to be tentative and to digress in ways that would be inappropriate in more formal assignments and tests. As a result, teachers usually do not grade journals though they count them for credit if students regularly make entries. Rather than marking and grading them, teachers respond in the margins to the content of the entries; comments like "Very interesting! I've thought that too" or "Have you ever stopped to think . . . ?" are not uncommon. The cumulative effect of journal entries and teacher responses is that of a written dialogue or conversation; indeed keeping journals is sometimes called dialogue-journal communication (cf. Staton, Shuy, Kreeft Peyton, and Reed, 1988). Students and teachers take turns speaking just as conversants do. As in conversation, teachers typically pick up on and comment on the substance of the entries, and by doing so, they sustain the dialogue. In our terms, uptake and level of evaluation are both high.

Since journal keeping usually allows students to write about just those things that interest them, one may reasonably ask whether journal keeping has any real payoff in academic achievement or writing development. Is journal keeping really good practice for writing themes and tests? How much "transfer" can there be in such tasks? Will students write better simply because they write frequently? These questions about "practice" and "transfer" misconceive the benefits of both writing development and journal keeping. For while journal entries may be poor models of academic prose, the regular activity of keeping a journal is valuable for helping students to get to know their teacher as a reader who is interested in what they have to say and how they think, that is, as someone who is open to their ideas and responds, not just someone who assigns

homework and evaluates their performance. After they have written journal entries for a while and gotten to know this interested, receptive reader, they will presumably be more willing to take the kinds of necessary risks required by higher order thinking and more formal work.

Reading is authentic to the extent that it addresses questions that students deem are important, teaching them new things that they value, and also to the extent that teachers help students relate their readings to their own experiences. Contiguity of reading will be high to the extent that students discuss and write about their readings -- in other words, to the extent that reading relates to talk and writing.

Table 1 shows the potential of selected instructional activities for substantive student engagement.

Table 1 about here

Hypotheses Concerning Procedural Engagement, Substantive Engagement, and Academic Achievement

Student engagement is a cognitive phenomenon having to do with the extent to which students are mentally involved with the issues and problems of academic study. And so it is appropriate to describe student engagement in terms of sustained mental concentration, focus, and habits of thoughtfulness (Newmann, Onosko, & Stevenson, 1988). But like most aspects of cognition, student engagement has a social foundation. Substantive student engagement involves more than individual students: more precisely, it involves the interaction of students and teachers. This requirement for interaction clearly underlies the social nature of instruction.

In classes where students are substantively engaged, their involvement with academic content is likely to be manifested not in one or two indicators, but in a broad pattern of instructional discourse. Teachers who encourage substantive engagement, and students who become so engaged, may well be immersed in a dialogue that spans a variety of classroom activities. We would expect, for example, that classes devoting significant amounts of time to discussion and peer-group work, probably exhibit authenticity, contiguity, and a high level of teacher evaluation in their reading, writing, and question-answer activities.

We would further expect to find distinct patterns of influences associated with disengagement, procedural engagement, and substantive engagement, each considered separately, on academic achievement. First, we would expect to find a negative relation between achievement and disengagement. Students who are not even procedurally engaged in their schoolwork -- those who misbehave in class, who fail to do homework, and so on -- can hardly be expected to learn anything. Second, we would expect the effects of procedural engagement, while perhaps positive, to be weak. This is because readily observable indicators of procedural engagement -- such as doing homework, asking questions in class, and so on -- conflate procedural and substantive engagement. By contrast, we expect to find unequivocal, positive effects of substantive engagement on student learning of subject matter. Such engagement, as we describe below, can be measured by examining the frequency of substantively engaging activities such as discussion, small-group work, authentic questions, and the like.

In studies of peer conferencing, for example, Nystrand (Nystrand, 1986, chapter 8; Nystrand and Brandt, 1989) showed that students who participated in peer conferencing learned to write better expository writing than others who wrote only for the teacher. Those engaged in peer conferencing increasingly

viewed their readers as collaborators in a process of communication and treated revision as a matter of reconceptualization, whereas the group writing for the teacher increasingly viewed their readers as judges and treated revision as a matter of editing. This study provides empirical support for the notion that instruction that is collaborative and substantively engaging, involving give-and-take on both sides, effectively promotes learning.

Data

Assessing these propositions requires fine-grained quantitative data on what teachers and students do in classes. During 1987-88, we collected data from 58 eighth-grade English classes in 16 Midwestern schools.[1] (Data were also collected from social studies classes, but they are not used in the present paper.) The schools selected differ in the compositions of their communities: three are rural and all-white; four are suburban, mostly white, and mostly upper-middle-class; and nine are urban schools that vary in their socioeconomic and ethnic make-ups. Ten of the schools are public junior highs or middle schools, and the remaining six are Catholic K-8 schools. In the Catholic schools, and in the rural and suburban public schools, all the eighth grade English classes participated. In the public urban schools, which tended to be larger, four classes from each took part. Of 1171 students in these classes at the beginning of the year, 1041 participated in the study throughout the year, for a participation rate of 89%. (About 8% of the students were absent or declined to take part, and another 3% were lost through attrition.)

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[1] What we are calling "English classes" were variously defined by the schools as English, reading, communications, literature, etc. In each school, we studied the eighth grade classes in which reading constituted the primary activity.

Data sources included student tests and questionnaires, teacher questionnaires, and classroom observations. Each class was visited four times by observers trained to evaluate the features of classroom instruction described below. Essentially, the classroom observation scheme focused on two tasks: noting the time spent in different types of activities, such as lecture, seatwork, discussion, and so on; and recording and coding the questions asked in class according to their authenticity, uptake, level of evaluation, and other aspects of instructional discourse. Data for each class were averaged across the four observations.

Indicators of Disengagement and of Procedural and Substantive Engagement

Indicators of disengagement included student-reported frequency of failing to turn in written work and to do reading assignments; the percentage of students clearly offtask during question-answer periods as seen by an observer; and the proportion of questions asked by teachers that received no response at all from students. We expected these variables to be negatively related to learning.

Indicators of procedural engagement included the number of hours per week students reported spending on homework for English class; student reports of the frequency with which they asked questions about what they were supposed to learn; and the proportion of students who were observed actively participating during question-answer sessions. (The latter figure, along with the proportion offtask, does not sum to 100% of each class because it does not include students sitting passively.) These variables may or may not contribute to learning depending on the extent of substantive engagement.

To measure substantive engagement, we operationalized concepts such as authenticity, uptake, and level of evaluation. During class observations, each question asked by teachers and students was written down and coded. (In case of rapid question-answer sequences, questions were recorded but not coded until after the observation.) The variable "authenticity of teacher questions" was constructed as the sum of authentic and quasi-authentic questions (with the latter weighted as one-half the former) divided by the total number of teacher questions.[2] "Uptake" indicates the proportion of questions that involved uptake, and "High-level evaluation" reflects the number of high-level responses divided by the number of teacher questions.

From teacher questionnaires, we also collected information on the quality of discourse embodied in reading and writing assignments. Authenticity of writing was indicated by the frequency with which students wrote in response to questions that had no prespecified answers. Authenticity of reading reflects authentic treatment of reading assignments, indicated by the extent to which teachers asked students to relate their reading to their own experiences, and by asking students to give their opinions about the readings. High-level evaluation of writing was assessed on a standardized scale through questions about how teachers respond to written work and how they communicate their evaluations to students. Contiguity of writing indicates the frequency with which students write about what they have read, and discuss topics prior to writing. Similarly,

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[2] An **authentic question** is a question whose answer is not prespecified by the teacher. Examples include, "What did you think of the story?" or "Why do you say that?" By contrast, **quasi-authentic questions** are questions that allow some degree of student control over the flow of discussion. An example is, "Can you name one of the three causes we reviewed yesterday for the American Revolution?" This kind of question allows students some latitude; in this case the student is free to cite any one of the three causes.

contiguity of reading reflects how often classes discussed assigned readings and related readings to other readings.

Finally, discussion time and small-group time indicate the average daily time each class spent in these two activities. A distinction was made between question-answer time and discussion time, with the latter reflecting only the free exchange of comments, often uninterrupted by the teacher.

Indicators of Student Background and Achievement

Our ultimate goal was to document the connection between engagement and achievement. Consequently our study required measures of student learning, as well as indicators of student background and prior achievement, the purpose of the latter to control for external influences on learning and for students' prior skills.

Student learning was measured with a test of literature achievement administered in the spring of 1988. The test posed a series of questions ranging from simple recall to in-depth understanding and synthesis concerning five pieces of fiction that students had read during the year. The five readings were selected to represent a list of all fiction covered in class during the year. Thus, the questions on the test were of the same type in all 58 classes, but the stories they concerned differed from class to class. For example, all students were asked to describe the conflicts in five readings, but the list of readings varied, depending on what they were supposed to have read. These tests were holistically scored on dimensions such as extent of recall, depth of understanding, identification of characters' motivations, and so on. Each test was scored by two raters, and the marks were averaged. When the marks differed by more than one point on any given item, the items received an additional two readings. Interrater agreement was calculated as a correlation of .90.

To control for students' prior capacity writing and reading abilities, two tests were administered in the fall of 1987. The first test elicited a writing sample from each student. It was scored by two readers, whose marks were averaged, on two dimensions: level of abstraction, based on Britton et al.'s (1975) categories of transactional-informative prose; and coherence of argumentation, based on the 1979/1984 NAEP criteria for informative writing (in Applebee, Langer, & Mullis, 1985). Interrater reliability of scoring this test was .70. The second, a test of reading power taken from the National Assessment of Educational Progress (NAEP), posed multiple-choice questions about a series of poems and narrative passages. This test also included a brief writing sample, which was scored using NAEP (1979) criteria for the identification and substantiation of personal emotions and feelings elicited by a short story. Scores obtained from two readers of this passage, which were averaged and added to the multiple-choice scores, correlated at .86. Looked at longitudinally, then, our tests address the following question: Given an initial level of reading and writing ability, in what ways do students differ in their attainment of mastery over their literature curricula?

Further controls included data on student background characteristics. Student questionnaires yielded information on students' race, ethnicity, sex, and socioeconomic status (SES). The latter was constructed as an unweighted additive composite of student reports of mother's education, father's education, the higher of mother's or father's occupation on an updated Duncan SEI scale (Stevens and Cho, 1982), and possession of a list of home resources. Because a few schools placed seventh graders in some of the eighth-grade classes, we also included a control variable for each student's grade level.

Results

Our general argument can best be supported by showing that substantively engaging instruction tends to occur in patterned ways across classrooms, and by supporting our propositions about the importance of different forms of engagement for student achievement. Before turning to these analyses, however, it is useful to examine the amount of procedural and substantive engagement found in the classes in our sample. This information is provided in Table 2.

Table 2 about here

In most ways, the 58 classes appear to be characterized by a high degree of procedural engagement but little substantive engagement. Few students are offtask; most do their homework though they spend less than an hour a week on it; they ask questions once in a while; almost all of the teachers' questions elicit some answer; and about a quarter of the students in the classes appeared to be active during question-answer sessions. At the same time, there was very little discussion and small-group work -- an average of less than a minute per day in these classes. The average proportion of high-level evaluations was just 3%, and the average proportion of questions that involved uptake was only 11%. Students' writing tasks were authentic barely more than once per week, although the students tended to treat their readings authentically much more frequently. While an average of only 12% of the questions were authentic, another 22% were quasi-authentic, for an authenticity score average of 23.2%. Still, the overall picture appears highly consistent with earlier descriptions of secondary school classrooms as orderly but lifeless (Sizer, 1984; Goodlad, 1984; Powell, Farrar, and Cohen, 1986).

We have suggested that classes in which the quality of discourse was high would spend more time on activities that inherently involve substantive engagement: small-group work and discussion. Table 3 provides support for this prediction, especially in the case of discussion. Teachers who spend more time in discussion were more likely to assign authentic writing tasks and to respond to writing at a high level, more likely to treat readings authentically, and more likely to use uptake and other forms of contiguity in their lessons.

Table 3 about here

The core of our analysis is the examination of the relations between procedural and substantive engagement, on the one hand, and academic achievement, on the other. Table 4 presents regression analyses in which achievement on the literature test served as the dependent variable, to be explained by variation in conditions of background, disengagement, procedural engagement, and substantive engagement.[3]

Table 4 about here

Results are displayed from four regression equations. In the first column, achievement is regressed on only the background variables. As expected,

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[3] Given our expectation that high-quality instructional discourse would appear as a pattern of interaction in some classes, it was not surprising to learn that the indicators of substantive engagement covaried to a certain degree. This collinearity caused problems in the estimation of regression models, and we were forced to delete three variables from the analyses: evaluation of oral responses, authenticity of writing, and contiguity of writing. Thus, although we will discuss the impact of specific variables in describing the results, both our strategy of deleting collinear variables and our conceptualization of patterns of engaging discourse should lead one to take more seriously the overall pattern of results than the contributions of individual indicators.

students who performed higher on the fall tests of reading and writing maintained their advantage in the spring. In addition, non-blacks, non-Hispanics, and eighth graders scored higher than blacks, Hispanics, and seventh graders, respectively. SES also contributed positively to literature achievement. The difference between boys and girls on the test is statistically insignificant.

The relevance of procedural engagement appears in the second column. As we predicted, disengagement has a strong negative impact on achievement. Coefficients from these percentile variables must be read with their scales in mind: for example, the coefficient for offtask indicates that a 10% percent increase in the percent of students offtask would lead to a decline of 2.27 points in a student's test score. (The coefficient of .227 must be multiplied by 10 to arrive at this statement.) Similarly, an increase of 10% in student nonresponse to questions would drive achievement about 2 points downward. Further, for every 10% of writing assignments that students failed to complete, achievement is about three-tenths of a point lower. Thus, other things being equal, a student who did half his work could expect to score 1.5 points -- almost a quarter of a standard deviation -- below one who turns in all his work.

Also in line with our expectations, the influence of procedural engagement is more attenuated. Spending more time on homework did lead to higher achievement in our results: for each additional hour per week, students gained just under half a point. Given the amount of time this involves when cumulated over the school year, this effect appears modest. Moreover, the frequency with which students said they asked questions in class was unrelated to achievement. Finally, the observed percentage of students active during question-answer sequences exhibits a surprising, negative effect. Overall, these results support

our contention that procedural engagement may contribute to achievement, but that the relation is ambiguous.

The reason procedural engagement does not always lead to greater learning, we argued, is that it depends on what students are engaged with. Significant achievement is likely to occur only to the extent that students are engaged in the substance of academic issues. Column 3 of Table 4 shows the importance of substantive engagement for literature achievement. Students scored higher on the achievement test in classes exhibiting more uptake, more authenticity in question-answer, more contiguity of reading, and more discussion time. Uptake and discussion time appear to exert particularly strong effects: a 10% increase in uptake would lead to an advantage of more than a point; and for each additional daily minute of discussion, achievement would be four-tenths of a point higher.

The only anomalous finding in column 3 is the negative effect of small-group time. We suspect this occurred because, despite our conceptualization, what we counted as small-group time more often than not may have failed to include collaborative efforts among peers to solve challenging problems, but instead involved filling out worksheets and answering chapter questions in groups.

The full model of engagement and achievement is presented in column 4. The results here are very similar to what we found in columns 2 and 3: disengagement detracts considerably from achievement; procedural engagement has some positive effects (of homework time); and substantive engagement, as indicated by the quality of classroom discourse, reveals a significant tie to academic achievement.

It is instructive to compare the sizes of the coefficients across columns. First, the fact that the coefficients for the engagement variables are nearly the

same size in column 4 as they are in columns 2 and 3 suggests that the two forms of engagement are largely independent of one another, at least to the extent that they relate to achievement. This result is also reflected in the increase in the amount of variance explained by the final model when compared to either of the preliminary models. As column 4 shows, our full model accounts for nearly half the variance in literature achievement.

Second, it is important to note the decrease in the size of the coefficients for the background variables when one compares columns 1 and 4. The fall test effects appear smaller, particularly the effect of writing ability. Of the other background variables, only SES exerts a significant effect in the final model, and its coefficient is reduced in size as are the others. This pattern indicates that differences between advantaged and disadvantaged groups -- high and low achievers, those from high versus those from low SES backgrounds, and so on -- can be attributed in part to the schooling variables that are added to the model in columns 2 and 3. In short, the more advantaged students in our sample had more profitable schooling experiences.

Conclusions

Student engagement poses some puzzles for both teachers and researchers. On the one hand, it underscores the importance of individual student effort and commitment to schooling. And clearly, when we speak of student engagement, we have in mind individual students, not classes. Yet despite the fact that student engagement refers to the cognition of individual students, we seem unable to detect it or adequately describe its manifestations except in relation to the interactions of students with their teachers or with other students. When we attempt to describe what individually engaged students do or look like, we

inevitably limit ourselves to describing procedural engagement: we speak of students who appear to be paying attention, who do their work, who ask questions in class, and so on. By contrast, in order to describe substantively engaged students, we must turn to the general conditions of the class itself: when students ask questions, for example: Do their teachers follow up on these questions? How much latitude do students have in answering teacher questions? Do these questions mainly test their knowledge of what other people have thought and said, or do they respectfully elicit and follow up on actual thinking?

Substantive engagement and attendant reciprocity between teachers and their students is important for both low- and high-ability students. For low-ability students, it provides essential, because intrinsic, motivation. For high-ability students, it is key to developing higher order thinking. More than this, Cummins (1986) argues, substantive engagement is critical for disengaged minority students who, experiencing large classes, endless remediation, and top-down instruction, too often learn that what they have to say is irrelevant or wrong.

Substantive engagement depends not just on teachers transmitting important knowledge and presenting good lessons. Nor does it depend just on students paying attention, taking in information, and doing their work. More fundamentally, it depends on what teachers and students do together and how they work in terms of each other; neither can do it alone. Nonetheless, teachers are key to creating classrooms where reciprocity is respected and possible. For example, teachers must carefully attune their questions and assignments to student interests, expectations, and abilities, which they must take seriously and obviously respect. Teachers must be alert to the possibilities for instruction in the interests and questions their students bring to class, and they must be quick and flexible as they capitalize and follow up on these interests and questions.

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Table 1. Potential of Selected Instructional Discourse Types for Substantive Student Engagement.

Activity Type	Authenticity	Contiguity/Uptake	Level of Evaluation
CLASSROOM DISCOURSE			
Recitation	LOW	LOW	LOW
Nonrecitational question-and-answer	VARIES	VARIES	VARIES
Small-group work & peer conferencing	HIGH	HIGH	HIGH
Collaborative seatwork	NONE	NONE	LOW
Lecture	LOW	LOW	LOW
Discussion	HIGH	HIGH	HIGH
WRITING			
Journals & learning logs	HIGH	HIGH	HIGH
5-paragraph themes	LOW	LOW	LOW
Position papers	HIGH	HIGH	HIGH
READING	VARIES	VARIES	N/A

Table 2. The quality of instructional discourse: means and standard deviations.

Variable	Mean	Standard Deviation	Data Source
DISENGAGEMENT			
Offtask in class	4.60 percent	6.37	Class observation
Nonresponse to questions	2.42 percent	3.26	Class observation
Reading not completed	16.23 percent	23.43	Student Report
Writing not completed	13.68 percent	21.38	Student Report
PROCEDURAL ENGAGEMENT			
Active in class	25.75 percent	16.37	Class observation
Asking questions	6.06 times/month	10.12	Student Report
Time on homework	.94 hours/week	1.06	Student Report
SUBSTANTIVE ENGAGEMENT			
Authenticity of questions	23.16 percent	13.01	Class observation
High eval of oral response	3.01 percent	4.44	Class observation
Uptake	11.41 percent	7.15	Class observation
Discussion time	.86 minutes/day	1.79	Class observation
Small-group time	.65 minutes/day	2.50	Class observation
Authenticity of reading	21.65 times/month	12.50	Teacher Report
Authenticity of writing	5.06 times/month	4.62	Teacher Report
High evaluation of writing	-.70 [standardized]	.50	Teacher Report
Contiguity of reading	10.93 times/month	2.68	Teacher Report
Contiguity of writing	13.42 times/month	9.05	Teacher Report

N=58 classes for observed and teacher-reported variables, and 1088 students for student-reported variables, with small fluctuations due to item nonresponse.

Table 3. Correlation of discussion and small-group time with discourse variables (n=58 classes).

Discourse variable	Discussion Time	Small-group Time
Authenticity of questions	.02	-.02
Authenticity of reading	.24	.16
Authenticity of writing[a]	.40	.20
High evaluation of oral response	.08	-.03
High evaluation of writing	.28	.07
Uptake	.19	.25
Contiguity of reading	.23	.08
Contiguity of writing[b]	.35	.13

[a] N = 57 classes due to teacher nonresponse.

[b] N = 53 classes due to teacher nonresponse.

Table 4. Effects of disengagement, procedural engagement, and substantive engagement on literature achievement. Metric regression coefficients, with standard errors in parentheses. N = 924 students, missing values deleted listwise.

DEPENDENT VARIABLE: SPRING LITERATURE ACHIEVEMENT

Independent Variables	Models			
	Background	Procedural Engagement	Substantive Engagement	Full Model
BACKGROUND				
Sex (1=female)	.438	.467	.665	.631
	(.379)	(.363)	(.353)	(.343)
Race (1=black)	-2.670***	-1.546*	-1.942**	-1.185
	(.656)	(.635)	(.623)	(.606)
Ethnicity(1=Hisp)	-1.508*	-.153	-1.642**	-.658
	(.641)	(.622)	(.602)	(.590)
SES	1.619***	1.102***	1.409***	1.013***
	(.241)	(.238)	(.233)	(.233)
Grade (1=eighth)	2.090***	1.100*	1.465*	.368
	(.573)	(.564)	(.571)	(.566)
Fall reading	.390***	.299***	.363***	.298***
	(.038)	(.037)	(.036)	(.036)
Fall writing	.930***	.695***	.711***	.559***
	(.148)	(.142)	(.140)	(.135)
DISENGAGEMENT				
Offtask in class		-.227***		-.177***
		(.030)		(.033)
Reading not completed		-.019		-.015
		(.010)		(.010)
Writing not completed		-.031**		-.025*
		(.012)		(.011)
Nonresponse to questions		-.201***		-.228***
		(.057)		(.057)
PROCEDURAL ENGAGEMENT				
Active in class		-.032*		-.063***
		(.016)		(.016)
Asking questions		-.022		-.027
		(.018)		(.017)
Time on homework		.445**		.398*
		(.170)		(.163)
SUBSTANTIVE ENGAGEMENT				
Authenticity of questions			.035*	.028
			(.015)	(.015)
Authenticity of reading			.054	.066*
			(.028)	(.028)
High evaluation of writing			-.586	-.153
			(.402)	(.400)
Uptake			.119***	.086**
			(.027)	(.032)
Contiguity of reading			.332**	.278*
			(.117)	(.118)
Discussion time			.413***	.330**
			(.112)	(.108)
Small-group time			-.144*	-.195**
			(.071)	(.069)
R-SQUARE	.322	.399	.418	.470

* p<.05 ** p<.01 *** p<.001

APPENDIX

Table A. Means and standard deviations of variables included in regression analyses. N=924 students.

Variable	Mean	Standard Deviation
TEST SCORES		
Spring literature	14.636	6.779
Fall reading	21.619	5.311
Fall writing	6.412	1.388
BACKGROUND		
Sex (1=female)	.508	.500
Race (1=black)	.090	.286
Ethnicity (1=Hispanic)	.102	.303
SES	.016	.825
Grade (1=eighth)	.879	.327
DISENGAGEMENT		
Offtask in class	5.146	6.790
Reading not completed	15.722	22.913
Writing not completed	13.205	12.217
Nonresponse to questions	2.526	3.297
PROCEDURAL ENGAGEMENT		
Active in class	22.270	12.217
Asking questions	5.674	9.756
Time on homework	.957	1.069
SUBSTANTIVE ENGAGEMENT		
Authenticity of questions	23.487	13.265
Authenticity of reading	20.235	12.219
High evaluation of writing	-.038	.484
Uptake	11.030	7.348
Contiguity of reading	10.658	2.752
Discussion time	.770	1.716
Small-group time	.705	2.626